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1 CLAIMS

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3 What is claimed is:

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5 1. A precision positioning device comprising:
6 a first plate, the precision measuring mean secured to the first plate;
7 a second plate secured to the first plate;
8 a third plate secured to the second plate, the first plate being positioned between
9 the second plate and the third plate;
10 a fourth plate secured to the third plate, the second plate being positioned between
11 the third plate and the fourth plate; and
12 adjusting means for adjusting the position of the first plate, the second plate, the
13 third plate, and the fourth plate relative to each other.
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15 2. The precision positioning device of claim 1 wherein the first plate is secured to
16 the second plate by a plurality of first legs.
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18 3. The precision positioning device of claim 2 wherein each of the first legs have a
19 length, the length being adjustable.
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21 4. The precision positioning device of claim 2 and further comprising:
22 a flexure joint between each end of the first legs and the first and second plates.
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24 5. The precision positioning device of claim 1 wherein the second plate is secured to
25 the third plate by a plurality of second legs.
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27 6. The precision positioning device of claim 5 wherein each of the second legs have
28 a length, the length being adjustable.

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7. The precision positioning device of claim 5 and further comprising:
a flexure joint between each end of the second legs and the second and third
plates.
8. The precision positioning device of claim 1 wherein the third plate is secured to
the fourth plate by a plurality of third legs.
9. The precision positioning device of claim 8 wherein each of the third legs have a
length, the length being adjustable.
10. The precision positioning device of claim 8 and further comprising:
a flexure joint between each end of the third legs and the third and fourth plate.
11. The precision positioning device of claim 1 and further comprising:
a precision measuring/vibration isolation mechanism.
12. An apparatus for precision measuring, the apparatus comprising:
a first plate group for extra fine positioning;
a second plate group for fine positioning, the first plate group nested within the
second plate group;
a third plate group for course positioning and vibration isolation, the second plate
group nested within the third plate group; and
adjusting means for adjusting the position of the first plate group, the second plate
group, and the third plate group.
13. The apparatus of claim 12 wherein the first plate group includes a first plate and a
second plate.

- 1 14. The apparatus of claim 13 wherein the second plate group includes the second
2 plate and a third plate.
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- 4 15. The apparatus of claim 14 wherein the third plate group includes the third plate
5 and a fourth plate.
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- 7 16. The apparatus of claim 12 wherein the plate groups are nested together by a
8 plurality of legs.
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- 10 17. The apparatus of claim 16 and further comprising:
11 adjusting means associated with the legs for adjusting the length of the legs.
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- 13 18. The apparatus of claim 16 and further comprising:
14 a flexure joint between each end of the legs and each of the plate groups.
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- 16 19. The apparatus of claim 12 and further comprising:
17 a precision measuring device secured to the first plate group.
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- 19 20. A method for precision measuring, the method comprising:
20 providing a first plate group for extra fine positioning;
21 providing a second plate group for fine positioning;
22 nesting the first plate group within the second plate group;
23 providing a third plate group for course positioning and vibration isolation;
24 nesting the second plate group within the third plate group; and
25 adjusting the position of the first plate group, the second plate group, and the third
26 plate group.
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- 28 21. The method of claim 20 wherein the first plate group includes a first plate and a
29 second plate.

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22. The method of claim 21 wherein the second plate group includes the second plate and a third plate.

23. The method of claim 22 wherein the third plate group includes the third plate and a fourth plate.

24. The method of claim 20 and further comprising:
nesting the plate groups together by a plurality of legs.

25. The method of claim 24 and further comprising:
adjusting the length of the legs.

26. The method of claim 24 and further comprising:
rotationally securing each end of the legs and each of the plate groups.

27. The method of claim 20 and further comprising:
securing a precision measuring device to the first plate group.